

**Work Order ID 61701**

Tuesday, August 31, 2010 1:19:25 PM



Page 1

Item ID: D3137-5

Accept



Setup Start



Revision ID:

Stop



Item Name: Washer

Start Date: 8/31/2010 Start Qty: 12.00



Cust Item ID:

Required Date: 9/7/2010 Req'd Qty: 12.00



Customer:

Reference:

Approvals: Process Plan: 14 Date: 10-8-31 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D3137	Rev F								

100

0.00



Hardinge CNC LATHE SMALL

Hardinge

Memo

0.00

Hardinge CNC Lathe Small

1-Machine as per Folio FA471 and Dwg D3137-2-Identify as D3137-5-3-Debur

JL 10/09/15 (13)

110

0.00



QC2- Inspect parts off machine FAI/FAIB

QC

Memo

0.00

Quality Control

JL 10/09/15

13



120

0.00



QC8- Inspect parts - second check

QC

Memo

0.00

Quality Control

JL 10/09/15

13



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 61701**

Tuesday, August 31, 2010 1:19:25 PM

Page 2

Item ID: D3137-5

Accept

Revision ID:

Item Name: Washer

Start Date: 8/31/2010 Start Qty: 12.00

Required Date: 9/7/2010 Req'd Qty: 12.00

Reference:

Cust Item ID:

Customer:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

130

Chemical Conversion Coat per QSI005 4.1

0.00

⇒ M 10/09/16



HandFinish

Memo

0.00

Hand Finishing

✓ 13 ✓

140

QC3- Inspect Part Finish

0.00

BR 10-9-16



QC

Memo

0.00

Quality Control

13 ✓

150

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

Inspect work to Step 7

a/h S

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 61701

Tuesday, August 31, 2010 1:19:25 PM



Page 3

Item ID:	D3137-5	Accept		Setup	Start	
Revision ID:						
Item Name:	Washer			Stop		
Start Date:	8/31/2010	Start Qty:	12.00			
Required Date:	9/7/2010	Req'd Qty:	12.00			
Reference:						

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run	Start	
	QC:	Date:	SPC (Y/N):	Date:		Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160 	Identify as per dwg & Stock Location: <u>235</u>	0.00							
Packaging	Memo	0.00							
Packaging									
170 	QC21- Final Inspection - Work Order Release	0.00							
QC	Memo	0.00							
Quality Control									

10/9/10 SP (132)

10/09/10 JF  
MF  
10-9-16

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

Tuesday, August 31, 2010 1:19:29 PM

Page 1

Work Order ID: 61701

Parent Item: D3137-5

Parent Item Name: Washer





Start Date: 8/31/2010

Required Date: 9/7/2010

Start Qty: 12.00

Required Qty: 12.00

Comments: IPP ☐ A ☐ 04.11.04 ☐ New issue ☐ KJ/JLM ☐  
IPP Rev B 08.07.03 ECN1207 EC verified by DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M6061T6R0.750		Purchased	No			100	f	16.1195	0.0208	0.262737			
 													
6061-T6 Round Bar .750"													

22 10/09/15

Location	Loc Qty	Loc Code
- MAT	16.1027	
115469	16.1027	
MAT012	0.016842105	
112442	0.01684211	

3.0

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries





W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

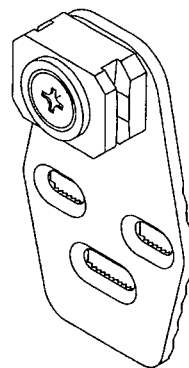
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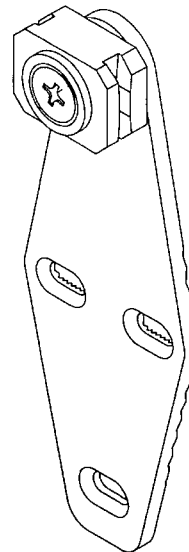
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

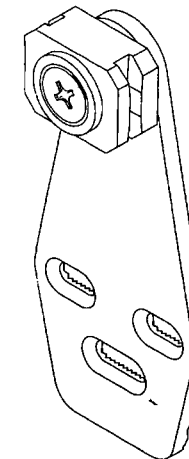
SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. *41701*  
*10-8-31*



**D3137-041 BRACKET ASSEMBLY**



**D3137-043 BRACKET ASSEMBLY**



**D3137-045 BRACKET ASSEMBLY**

**RELEASE**  
*08-06-2017*

F	REDRAWN & REFORMATTED IN SOLIDWORKS. SHEET 3 ZONE A 5 DIM 2.38 WAS 2.48, ZONE A 4 0.480 DIM WAS 0.805, ZONE A 8 0.87 DIM WAS 0.79, ZONE B 5 4.850 DIM WAS 4.975 & ZONE B 8 5.29 DIM WAS 5.41. REASON: PART TRIMMED DUE TO INTERFERENCE WITH EXECUTIVE INTERIOR.		AJS	08.05.30
E	ADD -045		RF	05.11.23
D	RE-DESIGN D3137-5; CHANGE DIMS		DS	04.11.03
C	ADD -043		DS	03.08.15
B	ADD RIDGES; ADD MATERIAL PROP		DS	03.01.16
A	NEW ISSUE		DS	02.04.17
REV.	DESCRIPTION		BY	DATE
DESIGN	DS	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA		
DRAWN	AJS			
CHECKED	<i>[Signature]</i>	DRAWING NO.	D3137	REV. F
MFG. APPR.	<i>[Signature]</i>	TITLE	BRACKET ASSEMBLY	SHEET 1 OF 5
DE APPR.	<i>[Signature]</i>	SCALE	NTS	
DATE	08.05.30	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

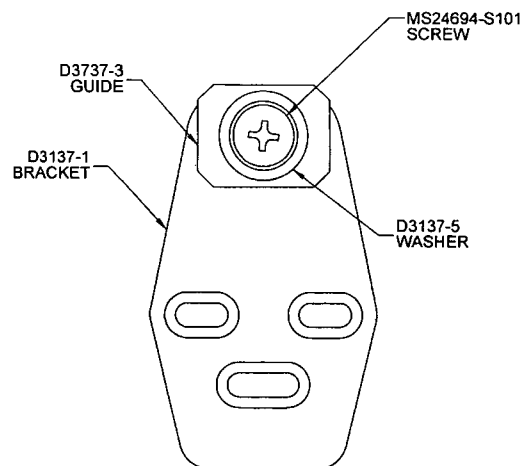
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Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

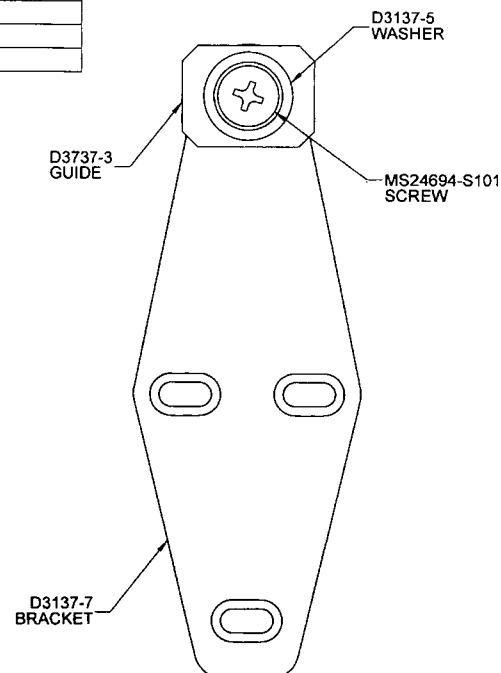
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

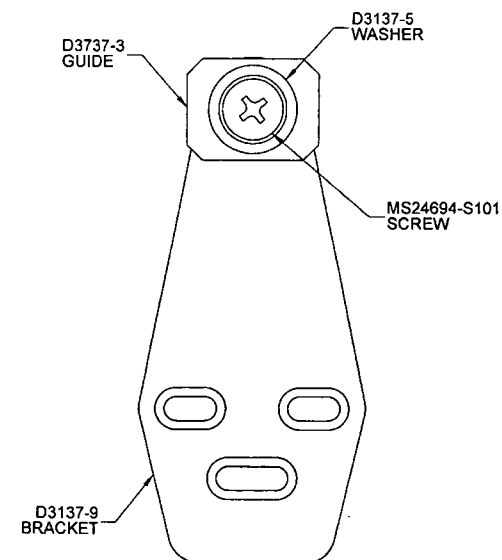
QTY. -041	QTY. -043	QTY. -045	PART NUMBER	DESCRIPTION
X			D3137-041	BRACKET ASSEMBLY
	X		D3137-043	BRACKET ASSEMBLY
		X	D3137-045	BRACKET ASSEMBLY
1			D3137-1	BRACKET
1	1	1	D3137-3	GUIDE
1	1	1	D3137-5	WASHER
	1		D3137-7	BRACKET
		1	D3137-9	BRACKET
1	1	1	MS24694-S101	SCREW



**D3137-041 BRACKET ASSEMBLY**



**D3137-043 BRACKET ASSEMBLY**



**D3137-045 BRACKET ASSEMBLY**

**NOTES:**

- 1) MATERIAL: N/A
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 0.18 lbs -041  
: 0.32 lbs -043  
: 0.27 lbs -045

**RELEASED**  
28.06.26/18

DESIGN	DS	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED		DRAWING NO. <b>D3137</b>	REV. F
MFG. APPR.		TITLE <b>BRACKET ASSEMBLY</b>	SHEET 2 OF 5
APPROVED		SCALE NTS	
DE APPR.		COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	
DATE	08.05.30		

*W/O 61201*

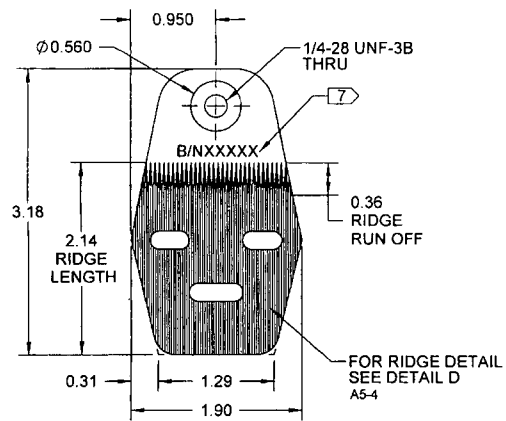
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

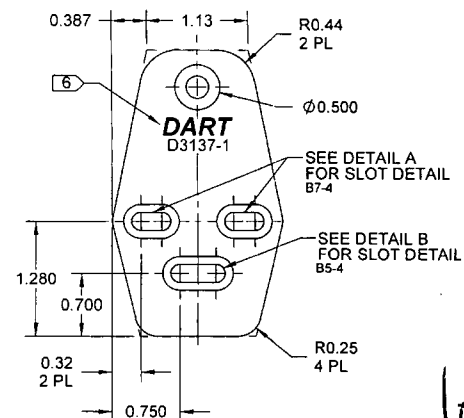
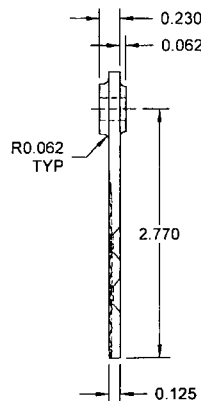
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

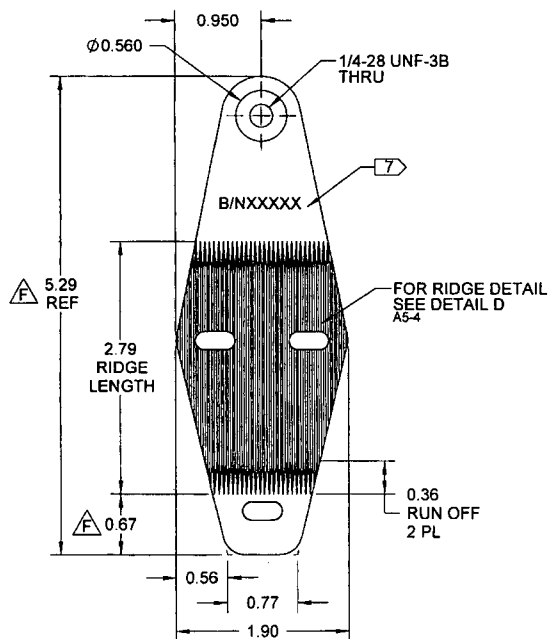
**NOTE:** Date & initial all entries



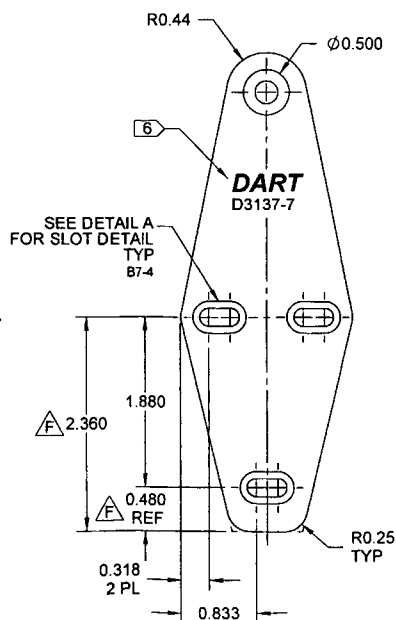
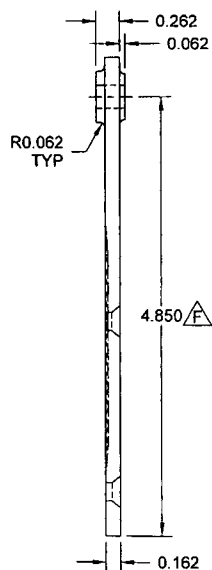
**D3137-1 BRACKET**



*w/o 41761*



**D3137-7 BRACKET**



- NOTES:**
- 1) MATERIAL: -1 & -7  
17-4PH STAINLESS STEEL  
PER AMS 5604 OR 5643  
MIN ULTIMATE TENSILE = 150 ksi  
MIN YIELD TENSILE = 100 ksi  
PER DART SPEC. M17-4-B
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.015 MAX
  - 6) IDENTIFICATION: ENGRAVE DART LOGO USING 0.20 HIGH LETTERS & P/N WITH USING .15 HIGH LETTERS TO A MAX. DEPTH OF 0.010.
  - 7) SCRIBE WITH DART B/N USING VIBRATING STYLUS
  - 8) WEIGHT: SEE ASSEMBLED WEIGHT ON SHEET 2
  - 9) -1 REPLACES PREMIER P/N B30-23000-105-1

**RELEASED**  
*08-06-26 1/4*

DESIGN	DS	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		<b>D3137</b>	SHEET 3 OF 5
APPROVED		TITLE	SCALE
DE APPR.		<b>BRACKET ASSEMBLY</b>	NTS
DATE	08.05.30	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

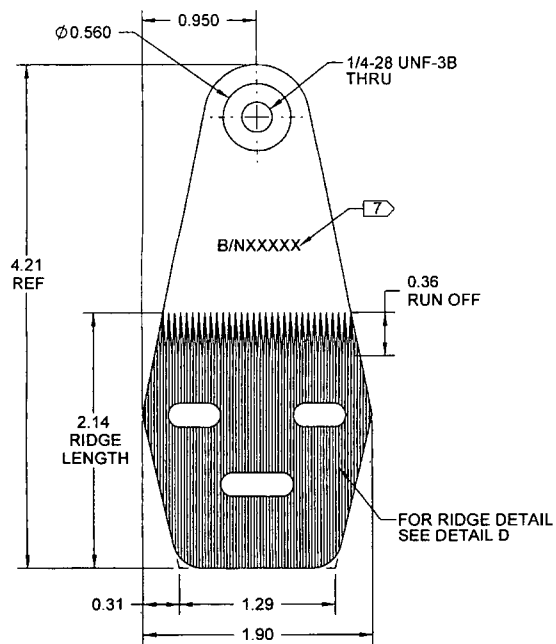
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Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

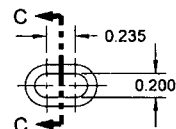
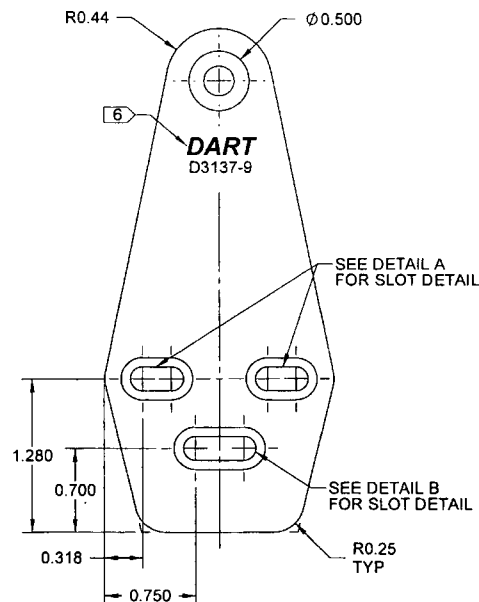
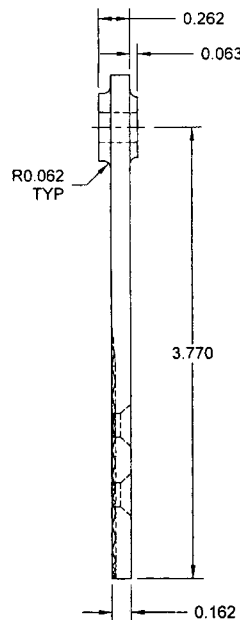
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

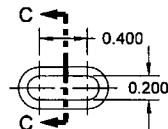




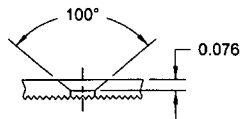
**D3137-9 BRACKET**



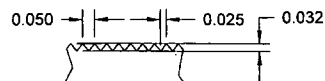
**DETAIL A  
(SLOT DETAIL)**



**DETAIL B  
(SLOT DETAIL)**





**SECTION C-C  
(SLOT DETAIL)**



**DETAIL D  
SCALE 2X  
(TYPICAL RIDGE DETAIL)**

**NOTES:**

- 1) MATERIAL: 17-4PH STAINLESS STEEL  
PER AMS 5604 OR 5643  
MIN ULTIMATE TENSILE = 150 ksi  
MIN YIELD TENSILE = 100 ksi  
PER DART SPEC. M17-4-B
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.015 MAX
- 6) IDENTIFICATION: ENGRAVE DART LOGO USING 0.20 HIGH LETTERS & P/N WITH USING .15 HIGH LETTERS TO A MAX. DEPTH OF 0.010.
- 7) SCRIBE WITH DART B/N USING VIBRATING STYLUS
- 8) WEIGHT: SEE ASSEMBLED WEIGHT ON SHEET 2
- 9) REPLACES PREMIER P/N B30-23000-105/-106

DESIGN	DS	<b>DART AEROSPACE LTD</b>	
DRAWN	AJS	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D3137	SHEET 4 OF 5
APPROVED		TITLE	SCALE
DE APPR.		BRACKET ASSEMBLY	NTS
DATE	08.05.30	COPYRIGHT © 2002 BY DART AEROSPACE LTD	
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*w/o 41701*

**RELEASED**

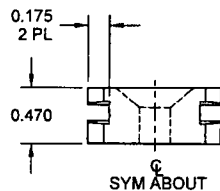
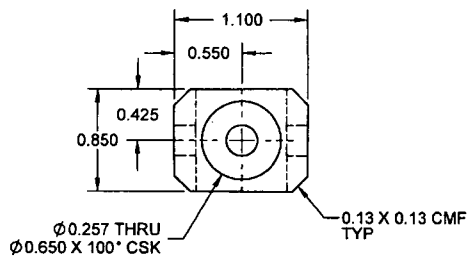
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

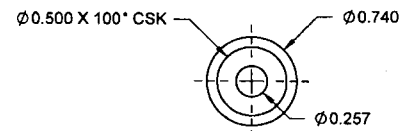
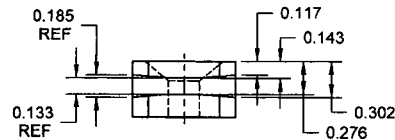
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

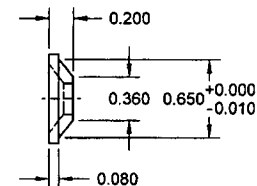
**NOTE:** Date & initial all entries



**D3137-3 GUIDE**



**D3137-5 WASHER**



**NOTES:**

- 1) MATERIAL: -3  
DELIN II 150E OR ACETRON GP ACETAL, BAR  
(REF DART SPEC M-DELIN-B)  
-5  
6061-T6 (OR 6061-T651/ T6510/ T6511/ T62) ALUMINUM BAR  
PER-AMS-QQ-A-225/8 (OR AMS 4117/ 4128/ 4145/ 4116)  
OR PER-QQ-A-200/8 (OR AMS 4160)  
REF. DART SPEC M6061T6R
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 (-5 ONLY)
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.015 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: SEE ASSEMBLED WEIGHT ON SHEET 2
- 8) -3 REPLACES PREMIER P/N B30-2300-207  
-5 REPLACES PREMIER P/N B30-2300-209

**RELEASED**  
08.07.02.12

DESIGN	DS	<b>DART AEROSPACE LTD</b>	
DRAWN	LAJS	HAWKESBURY, ONTARIO, CANADA	
CHECKED	LAJS	DRAWING NO.	REV. F
MFG. APPR.	LAJS	D3137	SHEET 5 OF 5
APPROVED	LAJS	TITLE	SCALE
DE APPR.	LAJS	BRACKET ASSEMBLY	NTS
DATE	08.05.30	<small>COPYRIGHT © 2002 BY DART AEROSPACE LTD. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries